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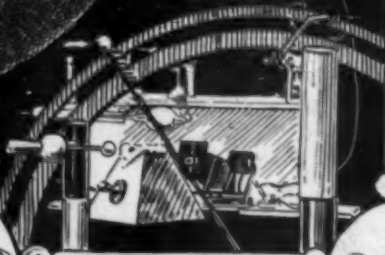
THE AMERICAN

X-RAY JOURNAL



A MONTHLY
DEVOTED
TO THE
PRACTICAL
APPLICATION
OF THE
NEW SCIENCE
AND TO THE
PHYSICAL
IMPROVEMENT
OF MAN.

HEBER ROBERTS M.D., M.E. EDITOR.
SUITE 310 CHEMICAL BUILDING,
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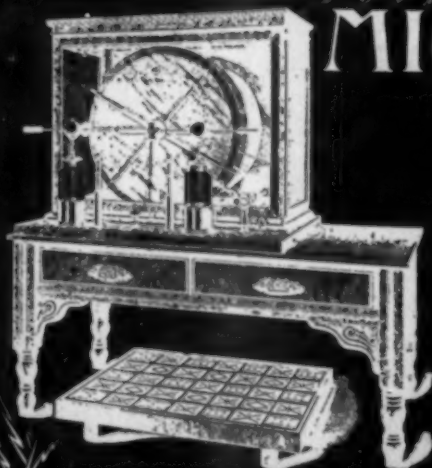
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THE AMERICAN X-RAY JOURNAL.

Devoted to Practical X-Ray Work and Allied Arts and Sciences.

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S. H. MONEILL, M. D.

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PHOTOGRAPHS "AND RADIOGRAPHS."*

PROOF OF ACCURACY ESSENTIAL TO ADMISSION AS EVIDENCE.

In *Cunningham v. Fair Haven & W. R. Co.* (43 Alt. 1047) the Supreme Court of Errors of Connecticut held that, in an action against a Street Railroad Company for negligence in allowing the rails of its track to project above the roadway, a photograph of the street, including the place of accident, is not admissible to show the height of the rails and the condition of the roadway, without any evidence as to its accuracy.

Justice Hammersley, voicing the Court's consensus, among other things, said that, a photograph offered for the purpose of proving the appearance of a physical object which cannot be produced in court, nor inspected by the jury is secondary evidence. Its correctness or accuracy, like that of a map or diagram, must be proved before it can be received. *Alberti v. Railroad Co.*, 118 N. Y. 77. In *Dyson v. Railroad Co.*, 57 Conn., 9, 14, 24, the offer of the photographs was accompanied by the evidence of the photographer who took them as to their accuracy, and of a surveyor who identified the points of view. The accuracy sufficient for the admission of a photograph as evidence is a preliminary

question of fact to be determined by the Trial Judge, and the testimony of the photographer is not essential if other evidence is produced, which, in fact, convinces the court. *McGar v. Borough of Bristol*, 71 Conn.—. It seems to be held in Massachusetts that the action of a trial court upon the proof of sufficient accuracy can never be reviewed by an appellate court (*Hamlin v. Morse*, 162 Mass. 414), although it may be by the jury (*Marcy v. Barnes*, 16 Gray, 161, 164). We do not see how this preliminary question differs from any other where questions of fact and law are intermingled. Questions of general policy may be involved, and these are usually questions of law; and for other reasons the conclusions of the trial judge may be so clearly against the law that we can, to a certain extent, review them,—as in cases of finding in respect to a reasonable notice to take depositions, or a diligent search for a lost document. *Nolan v. Railroad Co.*, 70 Conn. 159, 190. The proof of accuracy varies with the nature of the evidence the photograph is offered to supply. When it is offered as a general representation of physical objects as to which testimony is adduced for the mere convenience of witnesses in explaining their statements, very slight proof of accuracy may be sufficient; but when it is offered as repre-

*Quotation by Ed

senting handwriting which is to be subjected to minute and detailed examination, or any object where slight differences of height, breadth, or length are of vital importance, much more convincing proof should be required. It is common knowledge that as to such matters, either through want of skill on the part of the artist, or inadequate instruments or materials, or through intentional and skillful manipulation, a photograph may be not only inaccurate, but dangerously misleading. *Hynes v. McDermott*, 82 N. Y. 41. *Geer v. Mining Co.*, 134 Mo. 83; *Taylor's Will Case*, 10 Abb. Prac. (N. S.) 300, 318; *Eborn v. Zimpleman*, 47 Tex. 503. In the case at bar the photograph was not offered as a mere general representation of the locus in quo. For that purpose it was immaterial, if not irrelevant. A map was appropriate for such purpose, and that appears to have been in evidence. Its only relevancy as evidence was to show the height of the rail above the surface of the ground where the accident took place. Was the rail several inches above the ground, as stated by the witnesses for the plaintiff, or $1\frac{1}{2}$ inches on the inside, as stated by the witnesses for the defendant? Instead of an inspection of the ground and rail, a picture is offered. It is evident that for such purpose a photographic picture might be most deceptive, and that reliable proof of its accuracy should be produced, and found sufficient by the judge. We are not now called upon to determine the legal correctness of a finding of this kind, nor whether it can be reviewed. The question presented by the record is whether it was error to admit this photograph without any evidence of its accuracy. We believe no case can be found which warrants such action. It must depend on the assumption that a photograph in all cases is to be regarded as an accurate representation, unless the contrary is proved,—an

assumption opposed to all authority. The plaintiff undertook to lay the foundation for the introduction of the photograph as evidence, and for this purpose produced testimony tending to show the condition of the place of the accident was the same when the photograph was taken, as on the day of the accident; and produced no other testimony. The court thereupon, against the objection of the defendant, admitted the photograph. The ground of objection strongly urged by counsel, that this photograph could in no event be admissible in evidence, went, perhaps, too far; but he did distinctly urge that it did not correctly represent the rails. The record was a little blind, but it appears that the court admitted the photograph without any evidence of its accuracy, against objection on the ground of its inaccuracy, and apparently upon the theory that, the identity of the place being proved, a photograph is admissible without proof of its accuracy, which is error.

The above editorial, from the *Chicago Law Journal*, is copied in full because it expresses the counterpart of x-ray pictures that must soon occupy the attention of the courts. In nearly all of the States radiographs have been introduced in lower courts and admitted as evidence. We do not know of an appeal having been taken, based upon the inaccuracy of the picture, nor can we recall an instance in which objection was made followed by proof of the picture. In fact, it does not seem as if the judge and counsel had contemplated inaccuracy, but rather accepted the appearance of things much as if viewing a photograph, believing that it fairly represented the conditions. Every lawyer knows that it is wrong to admit a picture, photograph, a map or a diagram if the opposing counsel objects, unless the same has been proven to be correct. With a diagram or drawing it is readily seen how easily

error might occur, but with the photograph not so easy. On this subject, out of the human body, we will not occupy space. Concerning the anatomy it is all important that physicians should be informed as to its relation to radiographs. It will not do to be ignorant when before the court, testifying upon the accuracy or inaccuracy of our own radiographs. In medicine and in surgery we can be evasive, and thereby escape many a lash, but not so with work which is purely mechanical. X-ray pictures, I am sure, will no longer be accepted as evidence in courts of law when lawyers find that they have been heretofore deceived, unless the accuracy of their appearance can be proven. The proof of such a picture can not be contending evidence based upon mooted questions, neither can it be tainted with doubt, technicalities or double meaning phrases. The writer believes that the x-rays will mark the first period of time when medico-legal evidence will go before a jury or the judge in simple language and with positive understanding, and thenceforth, too, not as now, physicians may be said to be good witnesses.

An x-ray picture is a shadow without thickness, but it has perspective. The latter, however, can not concern a lawyer as that is purely diagnostic and technical. The dense shadows we will be called upon to explain.

We have a shadow that is not quite true due to the divergence of the x-rays from the anode. This is normal divergence, for it is constant and does not vary. This divergence might be sufficient, if the object to be examined was far from the sensitized plate, to considerably change the exact character of the object to be pictured. There is another divergence which is really a distortion, because it is due to position. These two conditions make a picture treacherous, uncertain and sure to misguide. The shadow we are to receive upon a plate will be dis-

torted precisely in the same manner as an object interposed between a candle and white wall. We can well recall the grotesque shadows we made on the wall with the fingers of the hands in childhood days, or were made by grown persons for our amusement.

They practically illustrate the error possible in x-ray work of to-day, in the possibility of distortion—either designed or accidental. If we examine a fracture or dislocation, or look for a bullet with the fluoroscope, and the body is fixed, the object to be examined will appear to be fixed also; but the slightest rotation will shift the shadow and change its outline, giving the appearance of fixation at another site. This movement can be effected at will. Should the object to be examined be near the screen, rotation of the body will not be attended with much distortion, but greatly so if far removed.

It is in this manner that erroneous opinions have become current; to the effect that a sound bone may be made to appear fractured and a fractured bone sound. In neither of these cases can this be done unless some extraneous device is employed. Fractures and dislocations can, however, be made to appear grossly exaggerated, or such malcondition may be made to appear in almost normal position. An operator ignorant of anatomy and of the principles of divergence may do either of these innocently. This is a vital point on which medico-legal cases will hinge.

It became apparent that unless distortion by position and normal distortion could be corrected it would be unsafe to employ this means in diagnosis for the surgeon and worthless, if not dangerous, in courts of law.

It should be here mentioned that if the light, or what is known as x-radiance, is only sufficient to cast a shadow dimly of the bones, then it is possible for a fracture to appear sound. But poor radio-

graphs are not, or should not, at any time be admitted for examination or for evidence.

The diagram Fig. 1 shows three positions of the tube with the fractured object stationary. It is apparent that the object could be shifted and produce the same shadows with a stationary tube. In fact, this is the manner by which most all distortions are made. The sensitive plate is placed in the diagram distant from the object to more clearly represent the diverging lines. It is clear that if the object

except by an expert. Experts are not wanted for that complicates the case for jury inspection. We must prove a picture by showing that the two arms of an impervious device fall in parallelism before the rays and cast a single shadow across the object. This will show the best possible position from two sides on the same plane. In this plane another picture should be taken at right angles to the first, which will give in the two pictures four views of the injury or missile, and in a line exactly with the shad-

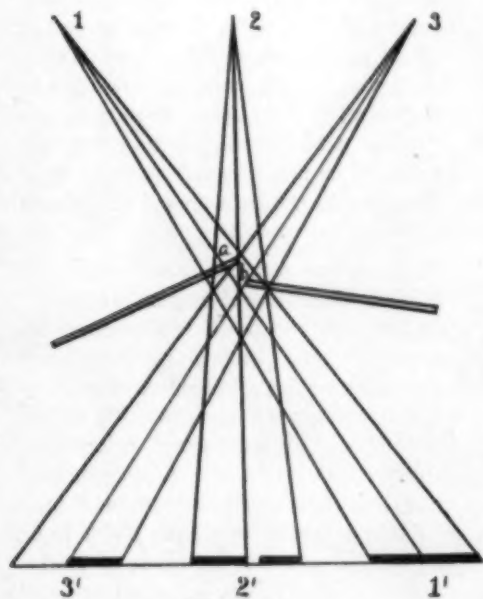


Fig. 1.

was against the plate the fracture would not be proportionately altered. In one position 1 to 1' there seems to be no fracture. This would not be exactly true in a good radiograph, for the cancelled structure would be interrupted and at this point would be detected by physicians, but not by laymen. The angle of separation is distinctly seen at 2 to 2' and much more marked at 3 to 3'. The shadow is upon a smooth surface and flat, so that the angle is not recognized

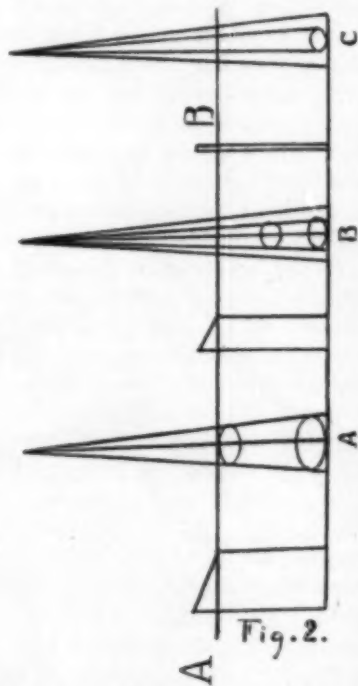


Fig. 2.

ow of the arms of the impervious device. This gives right angles and cross sections which are mathematically correct. It quickly familiarizes the mind with the conditions. Such an apparatus can be carried in the hand and its practical application shown to the jury. It readily convinces, because its shadows are as simple as those made by the hand on the wall.

Fig. 2 diagram A represents the arms of the impervious device, and B the same

brought into parallelism of the x-rays. A, B, C shows that the object distorts in proportion to its relation with the plate or screen, and that the distortion is twofold, viz., by divergence and by position.

In the case of the photograph mentioned in the *Chicago Law Journal*, the judge erred in accepting the picture when objection had been raised. He reasoned that the picture was that of a familiar place, and was not in himself broad enough to see that a specific point of the picture failed to reveal the truth, and was therefore inaccurate and failed of its intent and purpose. It is this same thing that will be contended of radiographs. They must have the stamp of proof to be accepted in courts of law, and without this proof they are worthless.—Ed.

X-Ray Equipment.

In connection with the Protestant Hospital and Ohio Medical University a first-class x-ray apparatus has been provided. This important method of diagnosis has become indispensable to surgery, and with improvements yet to be developed will, no doubt, soon bear the same relationship to medicine. In hospitals and colleges of consequence the x-ray apparatus is indispensable. By its aid fractures and dislocations may be unerringly diagnosed, foreign bodies correctly located, diseased bones examined, and many other instances embracing a wide field of usefulness in point of accurate diagnosis and successful treatment. Students will have repeated opportunities to observe the practical application of this important method of diagnosis. The x-ray apparatus is in charge of Professor Waters.

The above is taken from the catalogue of the Ohio Medical University. It indicates the advance step this splendid university has taken. Students of this university can be confident that they are

being taught abreast with the times.—Ed.

Static Spark on X-Ray Plate.

It is said that Dr. Wagner was the first person to get the impression by placing the sensitized plate between the sliding electrodes of a static machine. It appears that Mr. Gates, of the Smithsonian Institution, wrote his article, which appeared in the *Cosmopolitan*, after Dr. Wagner had made these same experiments. The illustration shown in the R. V. Wagner & Co. advertisement is a beautiful display of an electric spark from a static machine made upon an x-ray plate.

The "New Synergistic Medication" of the Antikamnia Chemical Co. appeals to the medical profession with rare favor. It has long been known that Antikamnia can be used with vegetable cathartics, and has been so prescribed, but the inconvenience and uncertainty of obtaining at all times just what was wanted has had much to do with retarding this form of medication. Antikamnia Laxative Tablets and Antikamnia Quinine Laxative Tablets are two most acceptable preparations put up in tablet form by the Antikamnia Chemical Co., and will meet the want so much felt by the medical profession.

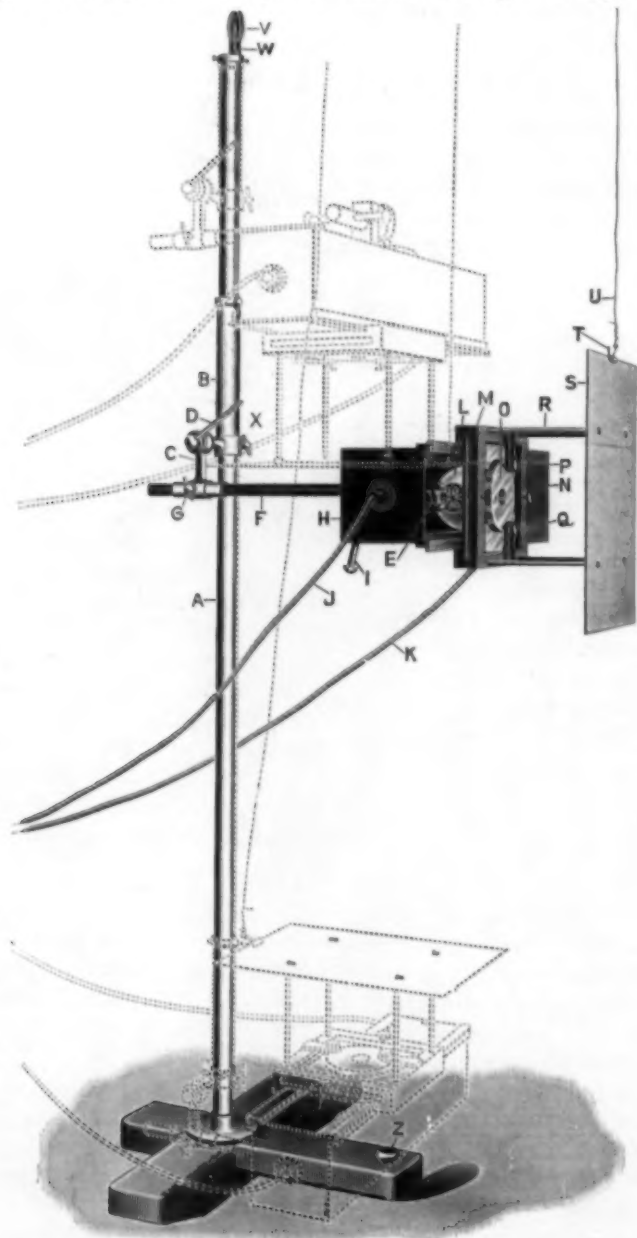
It is with a great deal of pride we are able to embellish our portrait page with a half-tone of Dr. S. H. Monell, of New York City. Dr. Monell is regarded as one of the foremost thinkers of the world and in electro-therapeutics has done more for static electricity than any living man. His voluminous writings have made for him a living history. His books on the use of electric currents in x-ray work and in electro-therapeutics, so essentially personal, has had an enormous sale. As an author, teacher, scholar, he is at the top, and yet in the prime of life, battling for greater achievements,—as he says, "I am not half done."

A TUBE HOLDER.

BY DR. WILLIAM ROLLINS.

An x-light tube fills a room with a

light tight case. Not to protect a plate from this is like trying to take an ordinary photograph without a camera to cut off all light except what comes



shining mist to which a photographic plate is sensitive though enclosed in a

through the lens. As far as possible therefore the patient should be covered

by a non-radiable screen having a hole to admit the narrow cone of rays required to light the part to be photographed. A second important matter is to have the tube enclosed in a comparatively non-radiable box so that no x-light can escape except what comes through a small opening in the attached diaphragm. This box should be so arranged as to be capable of being put in any position in relation to the patient. The accompanying figure shows a convenient tube holder.

A is a hollow brass tube two inches in diameter, attached by a screw thread to a strong base. This tube is high enough to allow the tube box to be brought as high as the head of a patient in an upright position. Inside the upright is a heavy lead weight to balance the whole tube box and attachments, so that they stay in any position. A cord going over the pulley V connects the weight with the sleeve B, which has ball bearings to prevent from binding. The dotted figures show the positions the tube can be put in to bring it above or below a patient on a stretcher. The tube is held in the box by soft rubber bands going over U-shaped supports. M is the diaphragm holder sliding along the tube box to bring the opening of the diaphragm O opposite the radiant area on the target. The screws P and Q allow the diaphragm to be moved up and down. The removable wood supports R hold the Tesla screen S to which is connected the grounding wire U by the clamp T. J and K are the mains which pass through hollow rubber sleeves in which they fit reasonably tight. These sleeves are tapered on the outside so they can at any time be removed from the hard rubber disks in each end of the box which help to insulate the mains. As these arrangements hold the mains firmly, it is quite unnecessary to do more with the terminal wires than to simply bring them in contact with the terminal loops of the tube; if the

mains get pulled about in the dim light of the x-light room, there is no danger of injuring the tubes where the loops are attached. G is a sleeve which allows the rod F to be moved forward and back. C permits the tube box to move through vertical arc and D clamps it.

WHERE IS THE FOCUS OF THE CATHODE DISCHARGE?

BY DR. WILLIAM ROLLINS.

Soon after Roentgen's discovery that Lenard's rays would penetrate the human body was announced, I found in experimenting with tubes that the statement of Crookes to the effect that the focus of the cathode stream was at the centre of curvature of the cathode, because the "molecules" were given off perpendicularly to the surface was not correct for the degree of exhaustion best suited for the production of x-light. I therefore placed the target on which the cathode discharge was to strike to produce x-light beyond this point. This form of tube has been copied by all makers because it has been found necessary for producing the best definition, the sharpness of the shadows depending upon having the radiant area small; which it cannot be if the target is placed in the centre of curvature of the cathode. In Note 3, in the *Electrical Review* for December 8, 1897, I explained why the focus was not at the centre of curvature, and should not now refer to it again, were it not for a recent occurrence which shows that this reason is not generally understood, though the practical benefits resulting from the observation are to be found in the tubes in every day use. A physicist recently, in consulting a tube maker in regard to new forms of tubes, desired to have the targets exactly in the centre of curvature of the cathodes, because, he said, this would give better definition than could be obtained with the present tubes where the target was be-

yond this point. Now the reason why the focus of the cathode stream is not at the centre of curvature is a necessary correlate of the generally accepted theory of the cathode stream, namely that this is composed of particles which are repelled from the cathode because their charges have like sign. For the same reason they must repel each other, the effect being to make them come together beyond the theoretical focus; the distance depending upon the intensity of their charges and on the degree of the vacuum. For practical purposes the focal point is twice the distance of the theoretical focus, that is, with a cathode having a curvature whose radius is one inch, the target should be about two inches from the cathode.

X-ray and Renal Calculus.

Leonard calls attention to the value of the Roentgen ray method of diagnosis in cases of renal calculus, pointing out the necessity of a careful adaptation of the light and exposure to the individual case. The shadows produced vary so slightly in their density that great care must be exercised in reading the negative. All that is essential to an absolutely positive or negative diagnosis are two or three negatives in which the details of the softer structures are clearly defined. When the renal outline can be made out it is certain that no form of calculus can escape detection, showing the possibility not only of detecting calculi that are present, even in their incipency, but also to demonstrate the absence of all calculi, no matter what their density. When calculi are known to be present, it gives their absolute location and number, when no calculi are present it saves the risks of an exploratory nephrotomy.—*Journal of the Am. Med. Ass'n.*

Subscription to the AMERICAN X-RAY JOURNAL is invariably in advance. The blue pencil cross-mark indicates delinquency. The small price of one dollar for this journal should not stagger any one.

X-RAY NEGATION LEADS TO POSITIVE DIAGNOSIS.

Sunday, Oct. 29, 1899.

Dear Dr. Roberts:—

After a most careful examination of Mr. W., I have come to the conclusion that the pus in the urine comes primarily from an abscess of the prostate or deep urethra, with secondary infection of the neck of the bladder—and, of course, a general cystitis following. It does not appear to me that the kidney is involved in the pus production for the reasons:

1. The x-ray failed to show (Dr. Roberts) stone in the kidney, the common cause of pyuria of renal origin;
2. Examination of the urine shows (Dr. Close) no trace of pus casts, or of epithelial casts—an almost positive evidence of itself that the pus does not come from the kidney; and

3. Urine passed after careful irrigation of the bladder shows much less debris than that before irrigation—a strong indication that the deposit comes from the deep urethra and bladder, and not from the kidney, or pelvis of the kidney.

I do not wish to declare positively that there is no pyelitis—only gathering the urine as it passes from the ureter could decide this beyond question, but I felt the case to be so clear, without the use of the Harris instrument, that I did not subject the patient to the discomfort of its trial.

So much for the negative evidence.

Of the positive symptoms: Rectal examination shows a prostate quite larger than should be present in a man of his age, with exaggerated tenderness; the passage of a large steel sound causes (a) considerable suffering; (b) the discharge of quite a little pus from the meatus, and (c) a decided showing of blood—which of itself is sufficient to determine the existence of a suppurative area in the prostatic urethra or the prostate itself.

As to treatment, it is possible that a

careful stretching of the prostate (Belfeld's method), followed by parenchymatous injections of a solution of indine-trichloride, 1 to 2000, 10 to 30 minims daily, distributed in various parts of the prostate, with irrigations of the bladder, might cure; it is worthy of trial if operation cannot, or will not, be accepted. The best treatment is open incision and drainage, in bed, curetting of the prostate, and any ulcers near the neck of bladder, etc. I am sure that with perfect drainage and a few irrigations of the bladder a cure of the suppurative, chronic prostatitis and cystitis may be effected.

Very sincerely yours,

EMORY LANPHEAR.

The diagnosis which was finally concluded in this case by Dr. Lanphear well represents the necessity of the use of the x-rays in diseases of the kidneys. This patient has had pathological urine for more than 15 years. He has consulted physicians and surgeons during this time and has taken treatment, but to no avail. Two surgeons of much eminence advised immediate nephrectomy, as stone was believed to be a certain factor in the renal ailment. The x-rays denied this opinion and paved the way for subsequent diagnosis.—Ed.

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HIGH RATE ROENTGEN TUBE.

—An illustration with brief description of a slight modification of the tube described in the Digest, Oct. 14.—*Lond. Elec. and Elec. Rev.*, Oct. 6.

ROENTGEN RADIATION.—Hil-

lers.—A series of carefully made experiments on currents traversing Roentgenized gases and the effect of the pressure of the gas on the current.—*Wied. Ann.*, 68, p. 196; abstracted briefly in *Science Abstracts*, Oct.

X-RAYS IN MEDICAL COLLEGES.

We have made the following inquiry of either the secretary or dean of every known medical college in the United States and Canada, furnishing return postage in each instance:

Doctor.....

Will you kindly inform me of the name of the physician connected with your school that does work with the x-rays?

Thanking you for this information,

Yours truly,

On the return stationery was written:
AMERICAN X-RAY JOURNAL.

Here are the answers:

ALABAMA.

Medical College of Mobile, Mobile.

Dr. Wm. B. Pape is the name of the physician who does work with the x-ray connected with the Med. College of Alabama.

ARKANSAS.

Med. Dep't Ark., Industrial University Little Rock.

Inquiry about apparatus being made.

CALIFORNIA.

Cooper Med. Col., San Francisco.

Dr. Emmet Rexford, Dr. Stanley Stillman.

University of Cal., Med. Dep't San Francisco.

Dr. Phillip Mills Jones, 803 Sutter St, San Francisco.

California Med. Col., San Francisco.

Dr. J. W. Hamilton, Parrote Bldg. Hahnemann Hospital Col., San Francisco.

Dr. Geo. H. Palmer, 606 Sutter Street.

College of Medicine, Los Angeles.

No answer.

Col. Physicians and Surgeons, San Francisco.

Dr. Geo. Adam, Phelan Bldg., is our Electro-Therapeutic Professor.

CONNECTICUT.

Yale University, New Haven.

Leonard C. Sanford, M. D., 216 Crown St., New Haven.

COLORADO.

The Colorado School of Medicine,
Boulder.

Dr. E. H. Robertson does the
work with x-ray.

University Denver Medical Depart-
ment, Denver.

No answer.

Gross Medical College, Denver.

No answer.

Denver Homeopathic Med. Col.,
Denver.

No answer.

GEORGIA.

Georgia College of Eclectic Medicine
and Surgery, Atlanta.

In reply to yours of 2d inst., I
will say that we are not doing a
great deal in the line you mention.
As Professor of Chemistry, I am
giving some attention to x-rays.

Atlanta College of Physicians & Sur-
geons, Atlanta.

Dr. T. P. Hinman, Inman Bldg.,
Atlanta.

ILLINOIS.

Illinois Med. Col., Chicago, Ill.

Members of the Faculty of the Il-
linois Medical College who use
the x-ray are: Dr. W. C. San-
ford, 103 State St.; Dr. J. L. Mor-
ris, 103 State St.

College of Physicians and Surgeons,
Chicago, Ill.

We have none.

Hahneman Med. Col. & Hospital,
Chicago, Ill.

Dr. F. H. Blackmarr, 2811 Cot-
tage Grove Ave.

Chicago Homeopathic Med. Col., Chi-
cago, Ill.

Replying to your inquiry I will
say that Dr. C. M. Neiswanger is
the electro-therapeutic lecturer at
the C. H. M. C.

Chicago Physio-Medical College, Chi-
cago, Ill.

Ottomar Carliczek will probably
be our x-ray representative. Schil-
ler Bldg., Chicago, is his address.

Jenner Med. College, Chicago, Ill.

You want the name of Dr. R. V.
Wagner, 308 Dearborn St. He is
our Professor of Electro-Thera-
peutics.

Rush Med. Coll., Chicago, Ill.

Dr. Joseph F. Smith, Mgr. X-Ray
Laboratory, Presbyterian Hos-
pital.

Northwestern University Med. School,
Chicago.

Mr. Fuchs, Schiller Bldg., Chi-
cago.

Northwestern University, Woman
Med. School, Chicago.

No answer.

Bennett College of Eclectic Medicine
and Surgery, Chicago.

No answer.

Herring College and Hospital (Ho-
meopath), Chicago.

No answer.

Harvey Medical College, Chicago.

No answer.

Nat. Med. Col., Chicago.

No answer.

Dunham Med. Col. (Homeopathic),
Chicago.

E. R. McIntyre, M. D., 92 State
Street.

Am. Med. Missionary Col., Chicago.
No answer.

Col. of Med. and Surgery, Chicago.

No answer.

IOWA.

Keokuk Med. Col., Keokuk.

Dr. C. E. Ruth.

Homeopathic Dep't State University,
Iowa City.

Prof. L. W. Andrews and A. A.
Veblen have such work as you
refer to, in their charge.

Med. Dep't State University, Iowa
City.

Z. G. Andrews, Prof. of Chem-
istry, and C. H. Bomman Inter.,
Prof. C. are the only people here.

Med. Dep't Drake University, Des
Moines.

Dr. D. W. Smouse.

Col. of Physicians and Surgeons, Keo-
kuk.

No answer.

Sioux City Col. of Med., Sioux City.

No answer.

INDIANA.

Central Col. of Phys. & Surgeons,
Indianapolis.

Dr. A. E. Stone has two x-ray
machines. Dr. Geo. D. Kahlo

has ordered an apparatus, and Dr. J. Rilus Eastman expects to get one very soon.

Physio-Med. Col. of Indianapolis, Indianapolis.

No answer.

The Med. Col. of Indiana, Indianapolis.

No answer.

Fort Wayne College of Medicine, Fort Wayne.

No answer.

Curtis Physio-Med. Institute, Marion.

No answer.

University of Medicine, Indianapolis.

No answer.

KENTUCKY.

Hospital Col. of Med., Louisville.

Dr. A. G. Hendon.

Kentucky School of Med., Louisville.

Dr. Jesse T. Dunn, 628½ Fourth Ave.

University of Louisville, Louisville.

Prof. H. M. Goodman has charge of our x-ray department.

Louisville Med. Col., Louisville.

No answer.

Louisville Nat. Med. Col., Louisville.

No answer.

KANSAS.

The Kansas Med. Col., Topeka.

Drs. W. S. Lindsay, J. C. McClintock, S. G. Stewart, and R. S. Magee.

Col. of Physicians and Surgeons, Kansas City.

No answer.

LOUISIANA.

Tulane University Med. Dep't, New Orleans.

No answer.

New Orleans University Med. Dep't, New Orleans.

No answer.

MASSACHUSETTS.

Boston University School of Med., Boston.

Dr. Winthrop T. Talbot, Dr. Thomas R. Griffith, Mr. Thomas E. Chandler at the school.

Harvard University Med. School, Boston.

All the surgeons and many of the physicians.

Tufts' Col. Medical School, Boston.

Dr. F. F. Strong, 178 Huntington Ave.

College of Physicians and Surgeons, Boston.

No answer.

MAINE.

Medical School of Maine, Brunswick.

On account of Dr. Mitchell's illness, who is dean of the faculty, Professor T. J. Robinson does the x-ray work. Dr. C. C. Hutchinson, the regular Professor in this department, is now in Germany.

Portland School for Med. Instruction, Portland.

No answer.

MISSOURI.

Col. of Physicians and Surgeons, St. Louis.

Dr. Waldo Briggs, 1405 Olive St.

Central Med. Col., St. Joseph.

Dr. J. W. Bell has the only x-ray in the city. Sixth and Francis St.

Ensworth Med. Col., St. Joseph.

Dr. J. W. Bell.

Kansas City Med. Col., Kansas City.

Dr. J. D. Griffith, St. Joseph Hospital.

University Med. Col. of Kansas City.

Dr. J. N. Scott, Ridge Bldg., is the electrician.

Kansas City University College of Homeopathic Med. and Surgery, Kansas City.

Dr. Chas. S. Elliott, Lect. on Nervous Diseases. He now has a book in press on electricity and the x-rays. 1103 Main St.

University of State of Mo., Med. School, Columbia.

Prof. M. L. Lipscomb, Chair of Physics, sometimes works with x-rays. No one regularly.

Homeopathic Med. Col. of Mo., St. Louis.

Dr. F. G. Comstock, 3401 Washington Ave.

Am. Med. Col. (Ecl.), St. Louis.

We have no one connected with us who uses the x-ray machine.

Beaumont Hospital Med. Col., St. Louis.

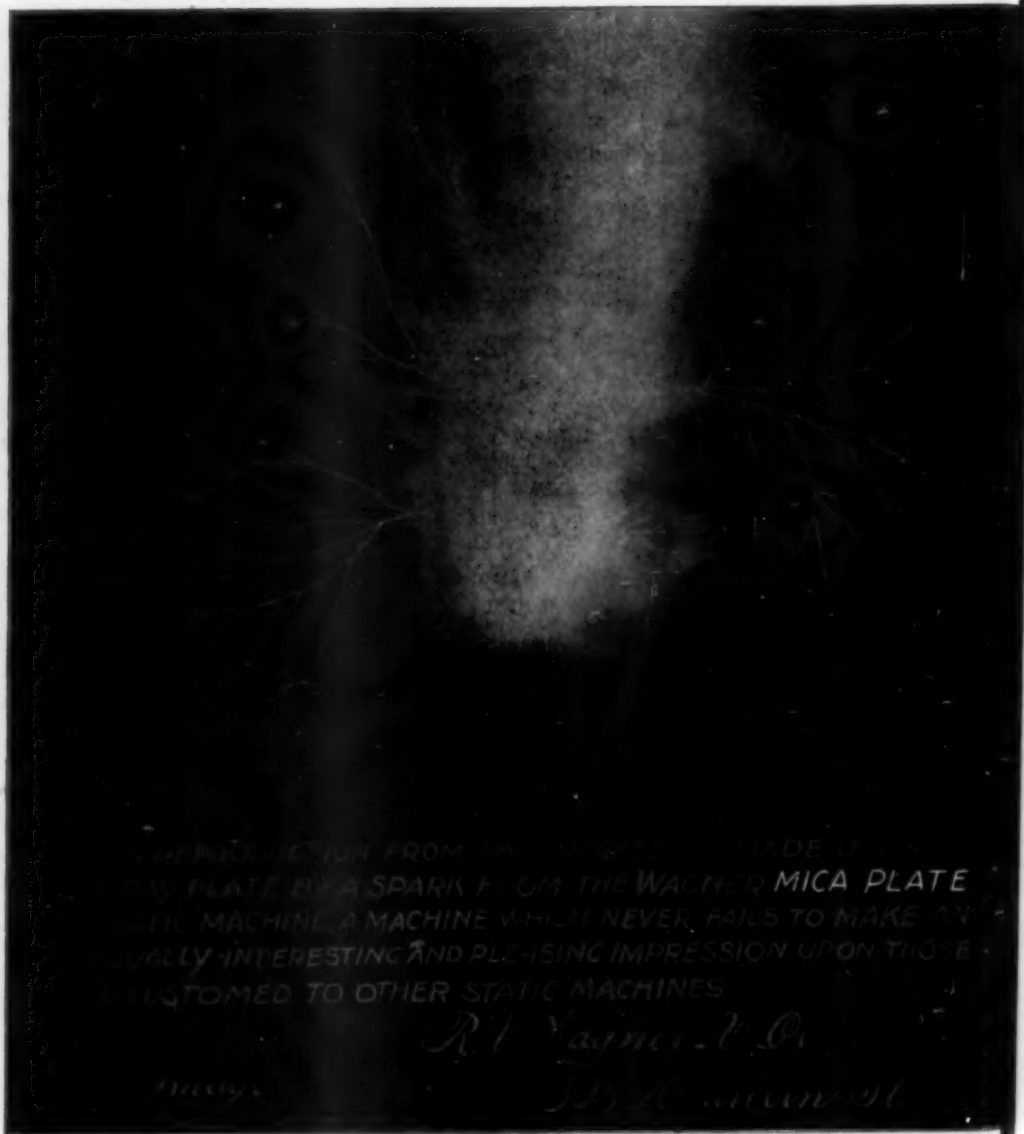
We have not any one who gives attention to x-ray subject.

Barnes' Med. Col., St. Louis.

Dr. Close is referred to.

Missouri Med. Col., St. Louis.

Dr. Von Brokaw.



Mo. Eclectic Med. Col., Kansas City.
Dr. N. J. Carraker, 9th and Walnut.

Med. Dep't Washington University,
St. Louis.

No answer.

Marion-Sims Med. Col., St. Louis.

No answer.

Women's Med. Col., Kansas City.

No answer.

Kansas City Homeopathic Med. Col.,
Kansas City.

No answer.

Medico-Chirurgical Med. Col., Kasas
City.

No answer.

MINNESOTA.

Col. of Homeopathic Med. and Sur-
gery, Minneapolis.

There is no one connected with
the school that does x-ray work.
We have our work done.

The Col. of Med. and Surg. of the Uni-
versity of Minn., Minneapolis.

Dr. Charles L. Green, St. Paul.

Med. Dep't of Hamline University,
Minneapolis.

No answer.

MARYLAND.

Col. of Physicians and Surgeons, Bal-
timore.

Dr. Alexius McGlannan, 313 N.
Green St.

Maryland School of Medicine, Balti-
more.

Dr. St. Clair Spruill, Lambert and
Green Sts.

Med. Dep't of John Hopkins Univers-
ity, Baltimore.

No answer.

Southern Homeopathic Med. Col. and
Hospital, Baltimore.

I do all the x-ray work of above
institution. I sent you a copy of
Am. Med. Mo. containing sample
of work. Very truly yours,

HENRY CHANDLEE, Dean.

Women's Medical Col., Baltimore.

The surgeons use the apparatus.

Dr. John G. Jay, 869 Park Ave.,
bought the machine and uses it.

Baltimore Med. Col., Baltimore.

X-ray work in this school is done
chiefly by our two surgeons, Prof.

R. W. Johnson, M. B., and Prof.

Jno. D. Blake, M. D.

MICHIGAN.

Detroit College of Med., Detroit.

Dr. Campbell, 65 Washington Av.

University of Michigan, Ann Arbor.

Dr. Wm. J. Herdman.

Grand Rapids Med. Col., Grand Rap-
ids.

Answer not definite.

Michigan Col. of Med. and Surgery,
Detroit.

No answer.

Saginaw Valley Med. Col., Saginaw.

No answer.

University of Michigan Homeopathic
Med. Col., Ann Arbor.

Prof. Benj. F. Bailey.

NEW YORK.

Albany Medical Col., Albany.

X-ray specialist is N. Wm. Hailes,
197 Hamilton St.

Women's Med. Col., New York City.

The Women's Med. Col. of the
W. S. Infirmary has ceased to
exist.

Niagara University Med. Dept., Buf-
falo.

The Med. Department of Niagara
University has for over a year
been a part of University of Buf-
falo, to whose secretary you may
look for answer required.

Ecletic Med. Col., New York City.

Dr. H. E. Waite.

New York Homeopathic Med. Col.,
New York City.

Dr. W. H. King, 64 W. 51st St.,
does x-ray work.

New York Med. Col. and Hospital for
Women, New York City.

Dr. William King, Electro-Thera-
peutist.

Long Island Col. Hospital, Brooklyn.

Prof. I. S. Wright, 30 Lehenne-
hor St.

Cornell University Med. Col., New
York City.

Dr. F. W. Gwyer, 130 East 38th
St. does most of the work in the
college as regards x-rays.

College of Physicians and Surgeons,
New York City.

Dr. E. Leaming is an official pho-
tographer for this college and his
laboratory here in the build'ng.

Dr. R. H. Cunningham does x-
ray work also.

Bellevue Hospital Med. Col., New York City.

I have 16 plates, 30 inches each, static machine. I am professor of operative and clinical surgery, Cornell University Med. Col., and visiting surgeon to Bellevue Hospital, and do x-ray work of both institutions. Yours truly,

DR. F. W. GWYER.

University and Bellevue Med. Col., New York City.

Prof. J. D. Bryant, M. D.

Buffalo Med. Dep't of University, Buffalo.

We do not use the x-rays.

Syracuse University Col. of Med., Syracuse, N. Y.

Dr. A. Clifford Mercer.

NEW HAMPSHIRE.

Dartmouth Med. Col., Hanover.

Dr. G. D. Frost.

NEBRASKA.

J. A. Creighton Med. Col., Omaha.

Prof. Chas. Cromley, Chemist, manipulates the x-ray machine.

Lincoln Med. Col. of Cotner University (Ecl.), Lincoln.

Dr. Arthur Carr, 1205 O St.

Omaha Med. Col., Omaha, Nebr.

Dr. J. E. Summers, Jr., McTague Block.

NORTH CAROLINA.

North Carolina Med. Col., Davidson.

Dr. Henry Louis Smith is our Professor of Physics and Medical Electricity. He makes use of x-rays frequently.

OREGON.

Willamette University, Med. Dep't, Salem.

We have no x-ray machine in the school.

University of the State of Oregon, Portland.

No answer.

OHIO.

Cleveland Hospital Med. Col., Cleveland.

Dr. Eber W. Gurley, 176 Euclid Ave.

Pulte Med. Col., Cincinnati.

Dr. H. H. Wiggers, 529 Everett Street.

Stearling Med. Col., Columbus.

Dr. L. M. Early, E. Long St.

Laura Women's Med. Col., Cincinnati. Wm. Taylor, 553 W. 7th St.

Eclectic Med. Institute, Cincinnati.

Dr. John R. Spencer, 952 W. 8th Street.

College of Medicine, Lebanon.

This school has not installed an x-ray plant as yet. Its course of study covers the Freshman and Sophomore studies in medicine only.

Ohio Medical University, Columbus.

Catalogue under cover by this mail. (They use x-rays.—Ed.)

Cincinnati Col. of Med. and Surgery, Cincinnati.

Dr. S. P. Kramer, 22 W. 7th St.

Medical Col. of Ohio, Cincinnati.

Dr. W. H. Crane, 20 W. 9th St. is our Professor of Med. Chemistry and has charge of our x-ray apparatus.

Miami Med. Col., Cincinnati.

Mr. W. J. Taylor, 553 W. 7th St.

Cleveland Med. Col., Cleveland.

Answer not legible.

Toledo Med. Col., Toledo.

Wm. A. Dickey, M. D., 2121 12th Street.

Cleveland Col. of Physicians and Surgeons, Cleveland.

No answer.

Cleveland Homeopathic Med. Col., Cleveland.

No answer.

Hygeia Med. Col., Cincinnati.

No answer.

PENNSYLVANIA.

Jefferson Med. Col., Philadelphia.

The undersigned operates x-ray apparatus in Jefferson Med. Col. Hospital. Yours truly,

L. H. PRINCE.

Medico-Chirurgical Col., Philadelphia.

Dr. M. K. Kassabian, Medico-Chirurgical Hospital, Cherry St., bet. 17th and 18th.

Western Penn. Med. Col., Pittsburgh.

No answer.

University of Pennsylvania, Philadelphia.

Dr. Goodspeed, Dr. Leonard.

Hahnemann Med. Col., Philadelphia.

No answer.

Women's Med. Col., Philadelphia.

No answer.

SOUTH CAROLINA.

Med. Col. of the State of South Carolina, Charleston.

Dr. Manning Simons, Prof. of Surgery, and others use the x-rays.

TEXAS.

Med. Dep't University Texas, Galveston.

Dr. Seth M. Morris, Prof. of Chemistry, does most of x-ray work with us. Dr. J. E. Thompson, Professor of Surgery, has recently taken it up personally.

Med. Dep't Fort Worth University, Fort Worth.

No answer.

TENNESSEE.

Med. Dep't University Tenn., Nashville.

Our apparatus has not yet come. When we receive it Dr. Hayden A. West will be in charge.

Meharry Med. Col., Nashville.

Dr. G. W. Hubbard writes: I do all of the work that is done with x-rays at this college.

Chattanooga Med. Col., Chattanooga.

I have official supervision of the operation of our x-ray instrument. Yours,

E. A. COBLEIGH, Dean.

University of Nashville, Nashville.

Dr. S. S. Briggs.

Vanderbilt University, Nashville.

No answer.

Tennessee Med. Col., Knoxville.

No answer.

Memphis Hospital Med. Col., Memphis.

No answer.

Sewanee Med. Col., Sewanee.

No answer.

Med. Dept. of Knoxville Col., Knoxville.

No answer.

VIRGINIA.

Med. Col. of Virginia, Richmond.

Wm. H. Taylor, M. D., 610 E. Grace St.

University Virginia Med. Dep't, Charlottesville.

Dr. J. Humphreys does work with the x-rays.

University Col. of Med., Richmond.

Dr. Stuart McGuire, 513 E. Grace St., is the only physician connected with the University Col. of Med. that uses x-rays.

VERMONT.

University Vermont Med. Dep't, Burlington.

There is no one who makes a specialty with the Med. Dep't. There is some work (very little) done by the hospital staff.

WASHINGTON, D. C.

Howard University.

Prof. J. W. Lamb, 906 9th St., has given some attention to x-rays.

Medical Dep't Columbia University.

Dr. P. R. Stone, 1345 F St. N. W.

University of Georgetown Med. Dep't. Prof. S. T. Vaughan, 816 17th St. N. W.

National University.

No answer.

WISCONSIN.

Milwaukee Med. Col., Milwaukee.

We have our work done outside.

University of Wisconsin, Madison.

Dr. B. W. Snow.

Wisconsin Col. of Physicians and Surgeons, Milwaukee.

No answer.

CANADA.

University of Bishops Col., Montreal, Ont.

In reply to yours of 4th inst., I beg to say that Dr. Robert Wilson, 596 Wellington St., our Professor of Materia Medica, does the x-ray work for our faculty.

Faculty of Medicine of Queen's University and Royal Col. of Physicians and Surgeons, Kingston, Ont.

Reference is made to Dr. Third, resident surgeon Kingston Gen'l Hospital.

McGill University Med. Dep't, Montreal, Ont.

Dr. G. P. Girdwood, Prof. of Chemistry and Physician and Surgeon-in-Chief to the Canadian Pacific R. R.

Toronto University Med. Faculty, Toronto.

No answer.

Trinity Med. Col., Toronto.

No answer.

Western University Med. Dep't, London.

No answer.

Ontario Med. Col. for Women, Toronto.

No answer.

Ecole de Med. et de Chirurgie, Montreal.

No answer.

NOVA SCOTIA.

Halifax Med. Col., Halifax.

No answer.

Salhousie University Med. Faculty, Halifax.

No answer.

MANITOBA.

Manitoba Med. Col., Winnipeg.

No answer.

Roentgen Ray in Incipient Tuberculosis.

Williams reports the results of examinations of 165 patients with incipient tuberculosis, by the Roentgen ray. The diagnosis of tuberculosis was confirmed by the discovery of the bacillus or the reaction of the tuberculin test. He groups his patients into two classes, those with slight physical signs but no rales, and those without physical signs. He reports cases of each. He thinks that the value of the Roentgen test is that it gives an early warning when other signs are not prominent, and in some cases it may correct a mistaken diagnosis of tuberculosis from apparent physical signs. It is also of value in cases of tuberculosis with pleurisy and effusion, with bronchitis and emphysema. In two cases the x-ray failed, though the other tests demonstrated the disease, but generally it is the most efficient means of diagnosis. The fluorescent screen is more reliable and convenient than photographs in these examinations.—*Journal Am. Med. Ass'n.*

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require,—will compel the excretory organs to perform their natural functions naturally, without griping or stomach sickness, and they are, therefore, the proper remedies for constipation, headaches, chills and fever, malaria, la grippe and allied conditions, coryza, colds, congestions and the general disturbances arising from suppressed action of the various functions of secretion and excretion.

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Watch for the Advertisement
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10-Gallon " " ".....	5.50.	" 3.50.

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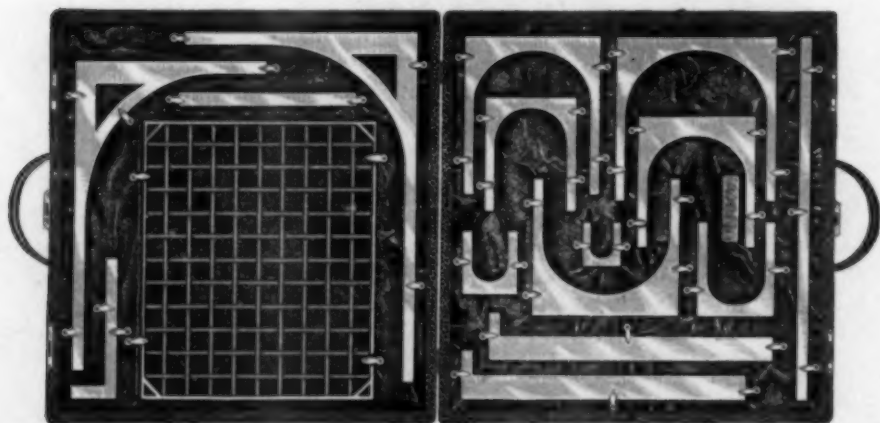
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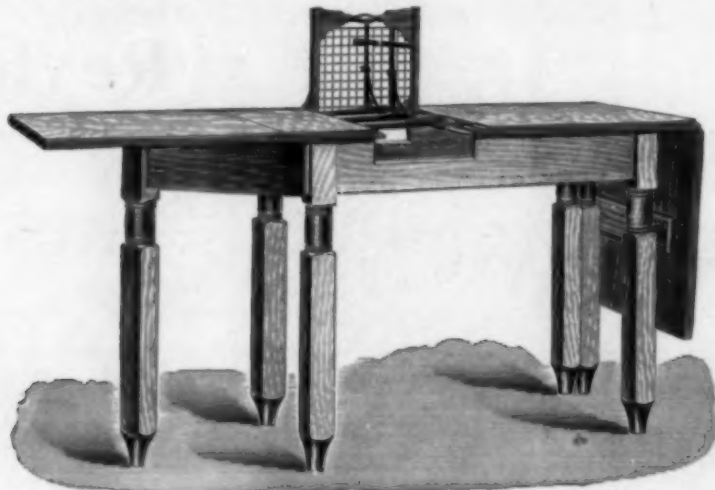
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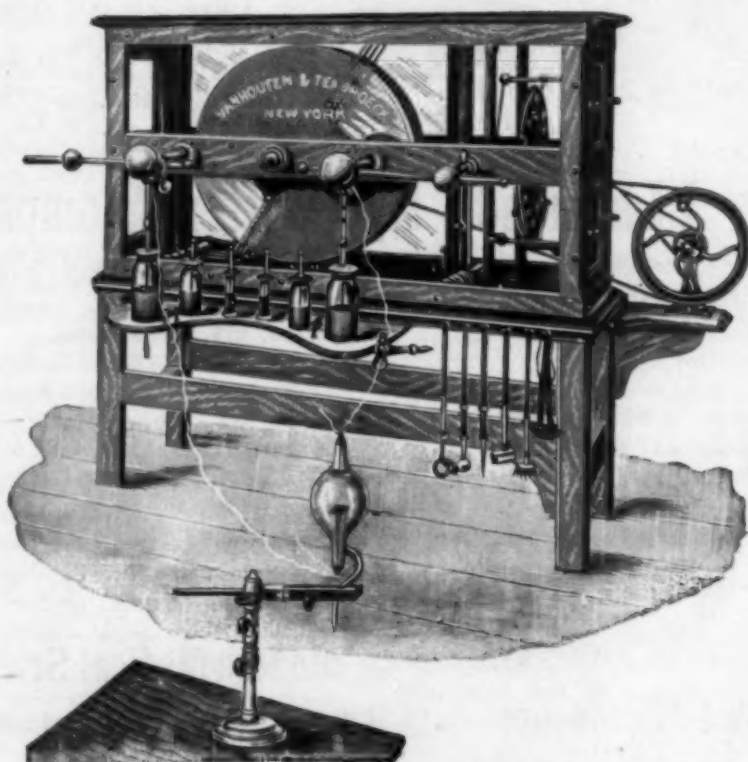
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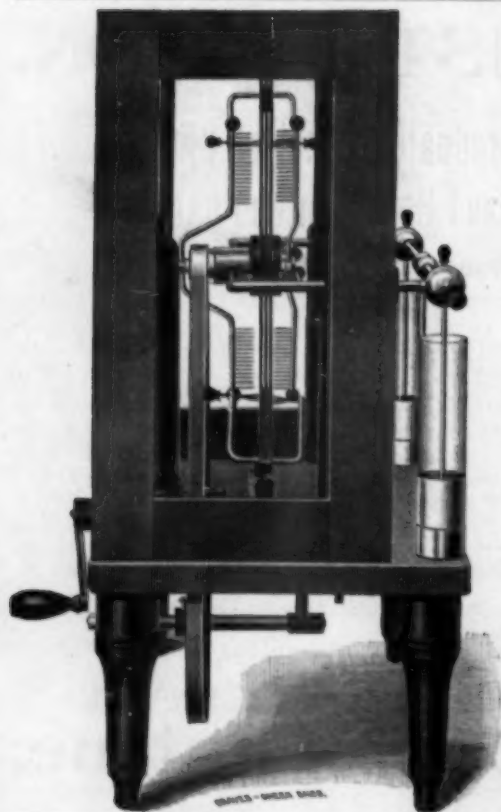
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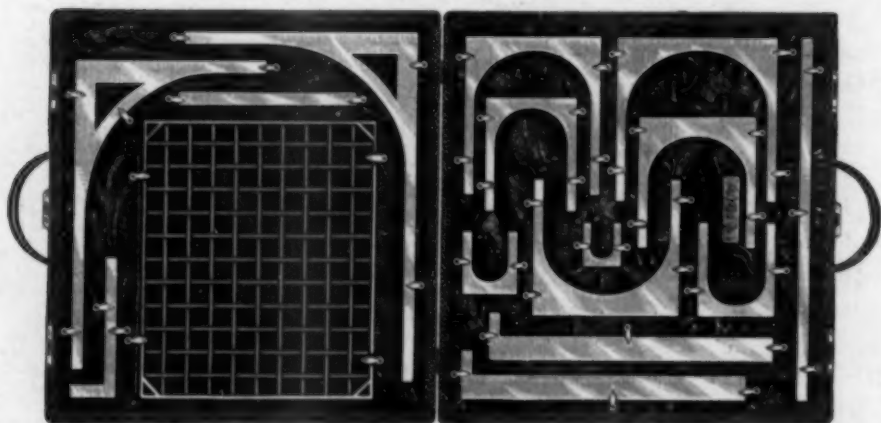
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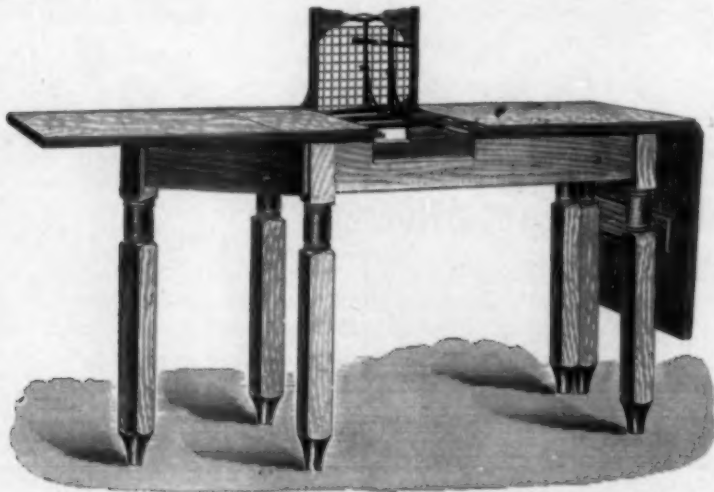
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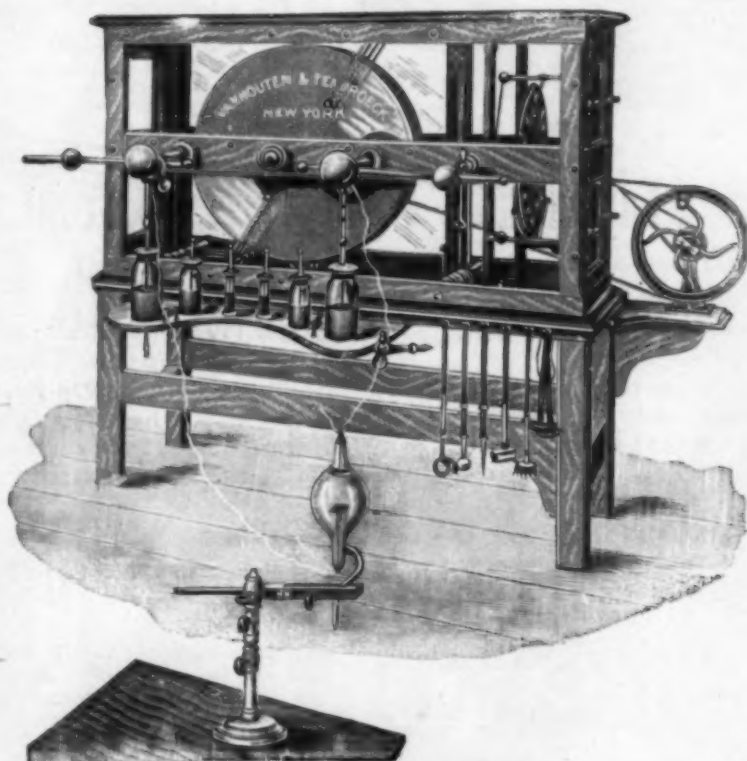
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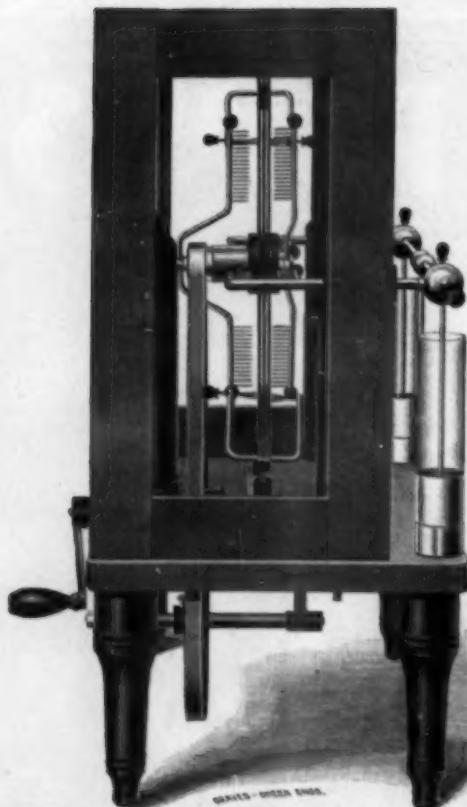
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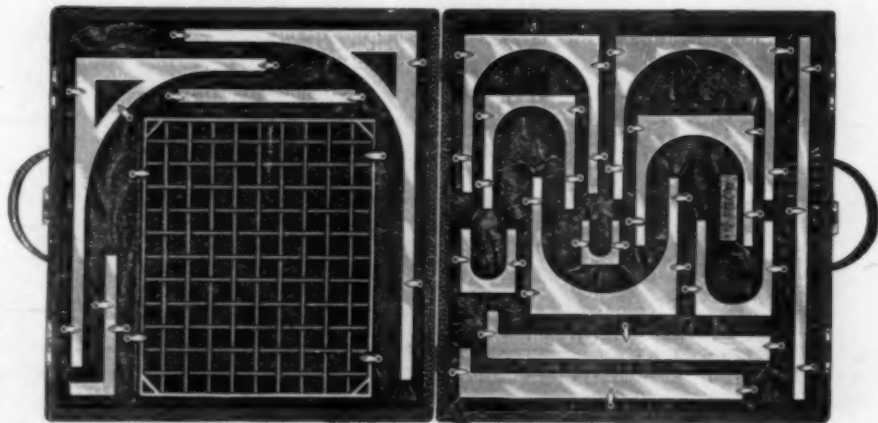
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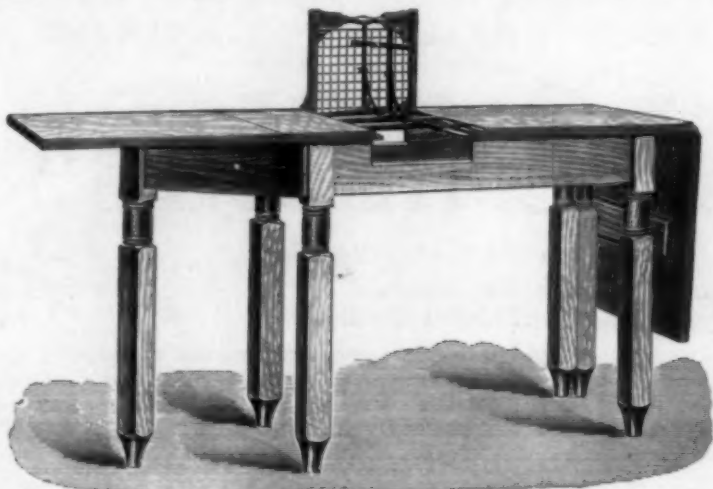
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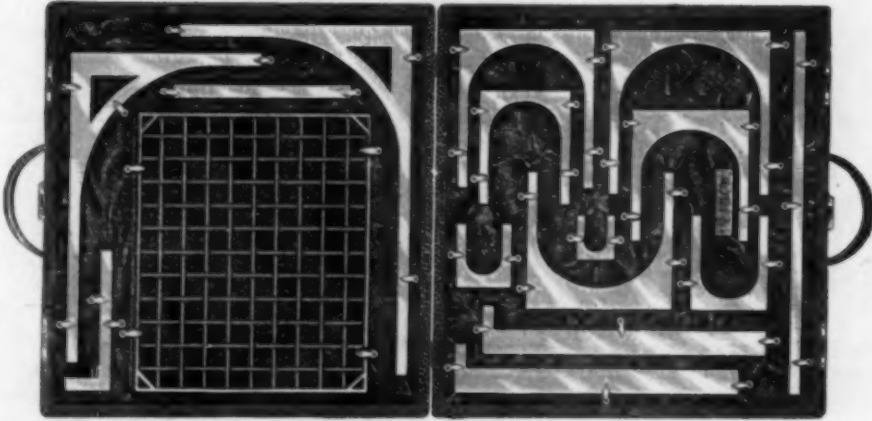
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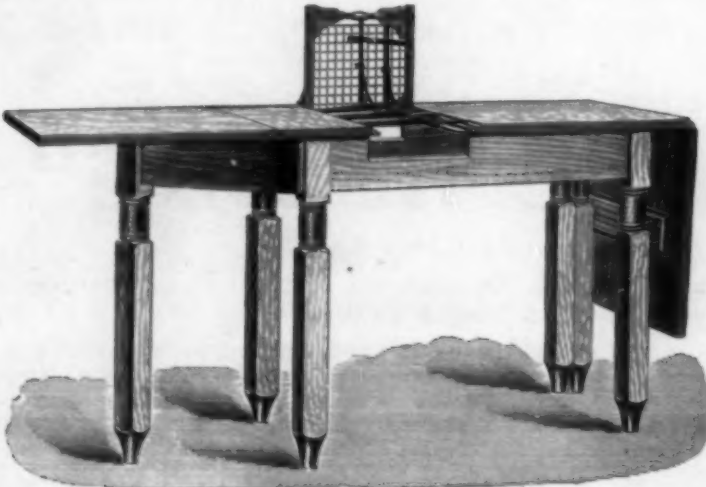
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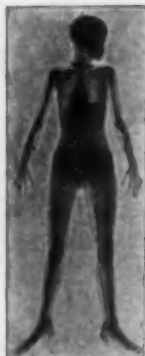


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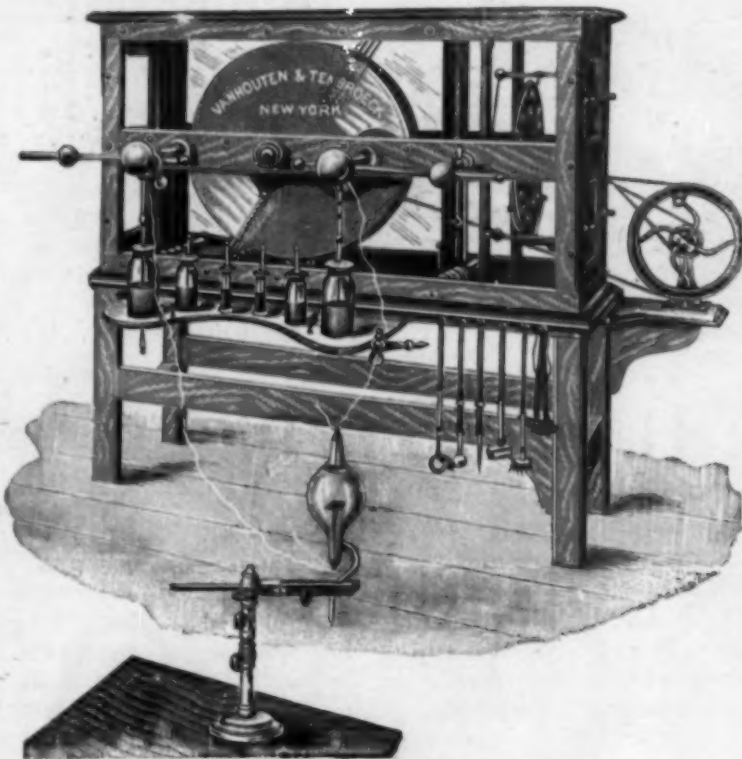
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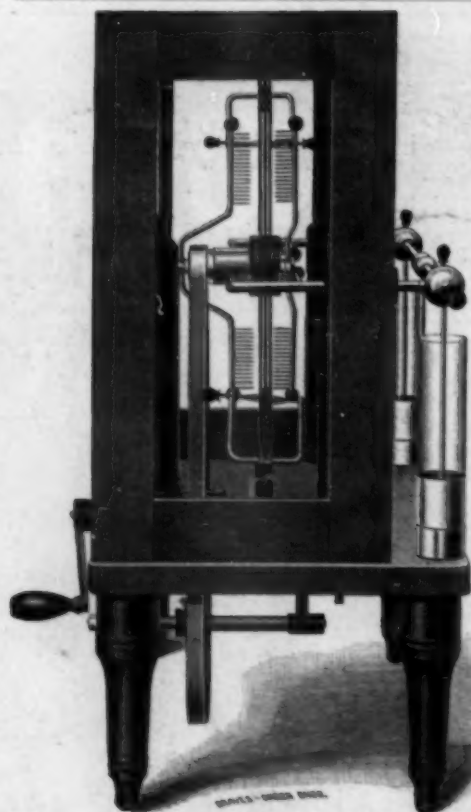
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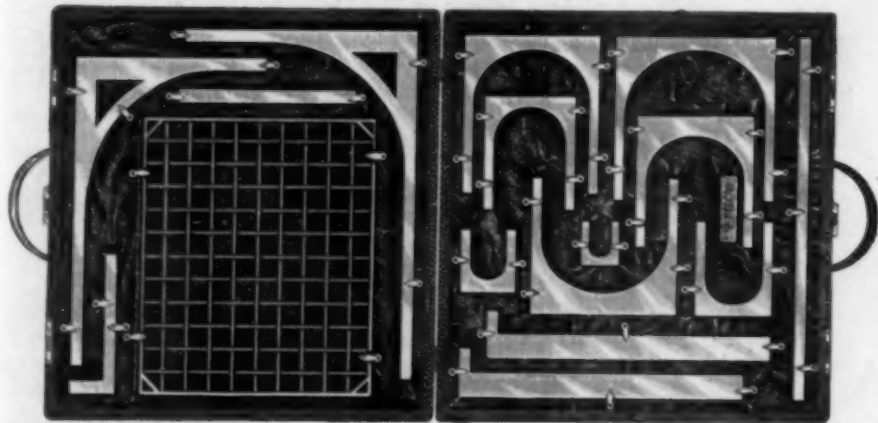
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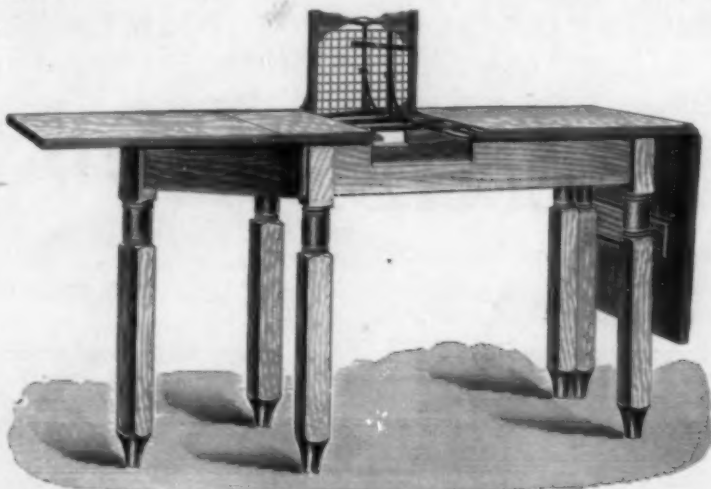
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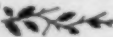


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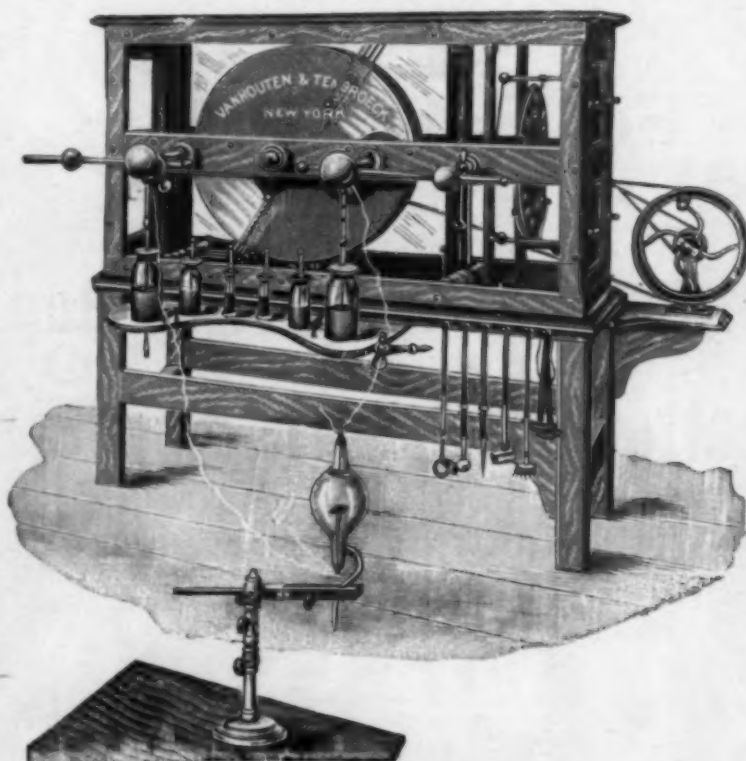
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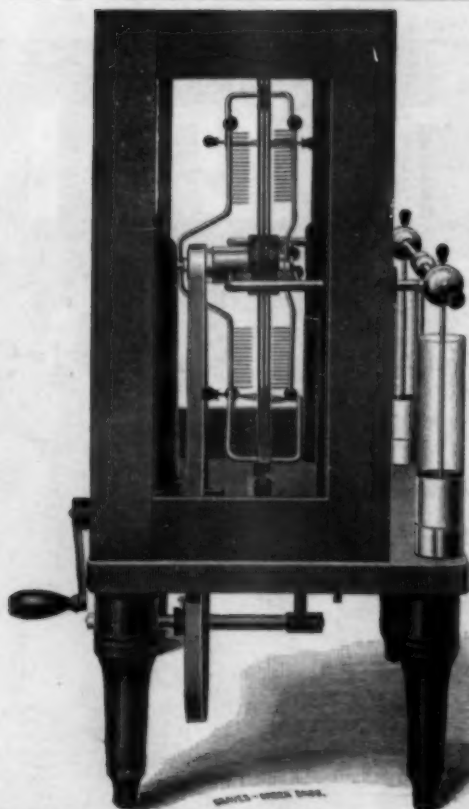
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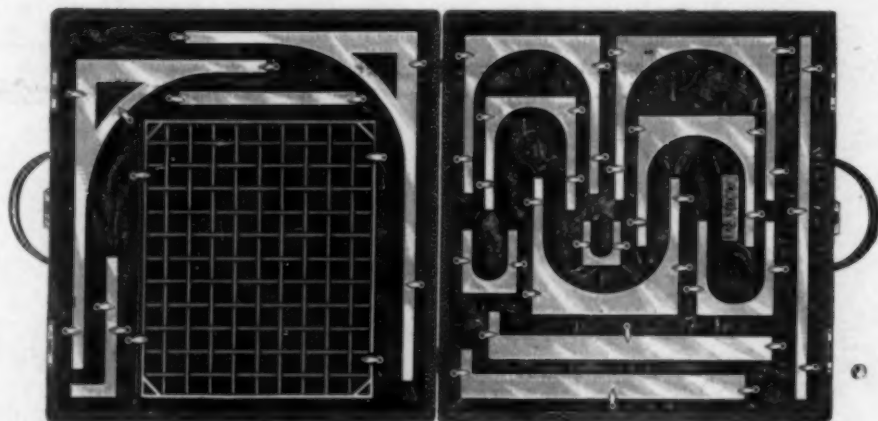
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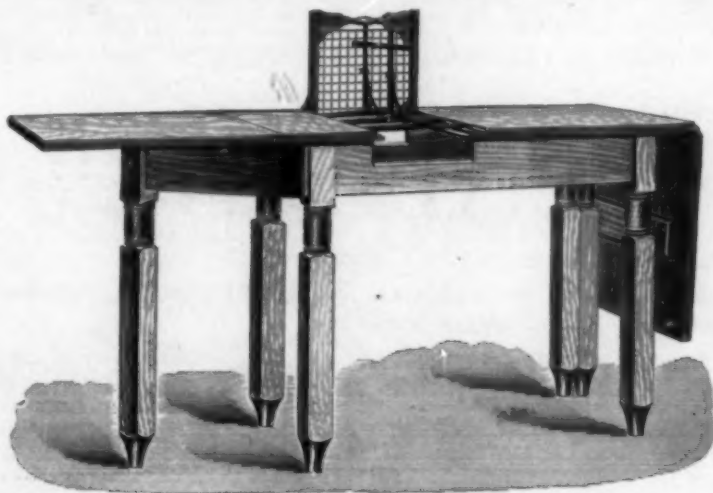
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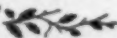
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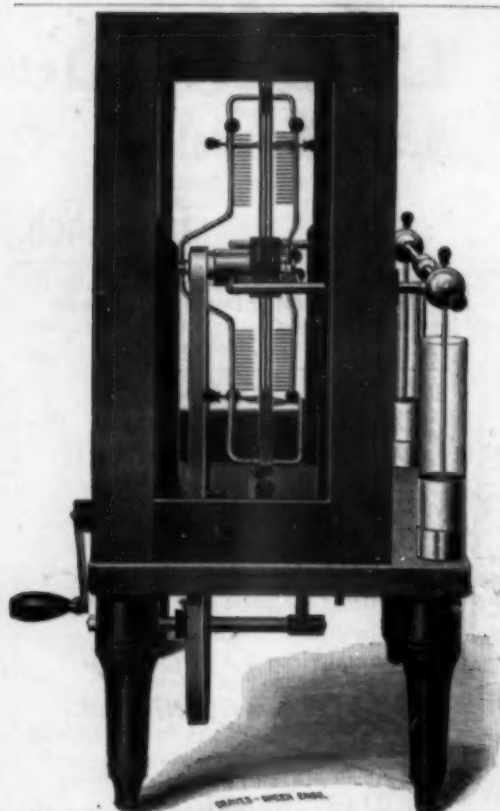
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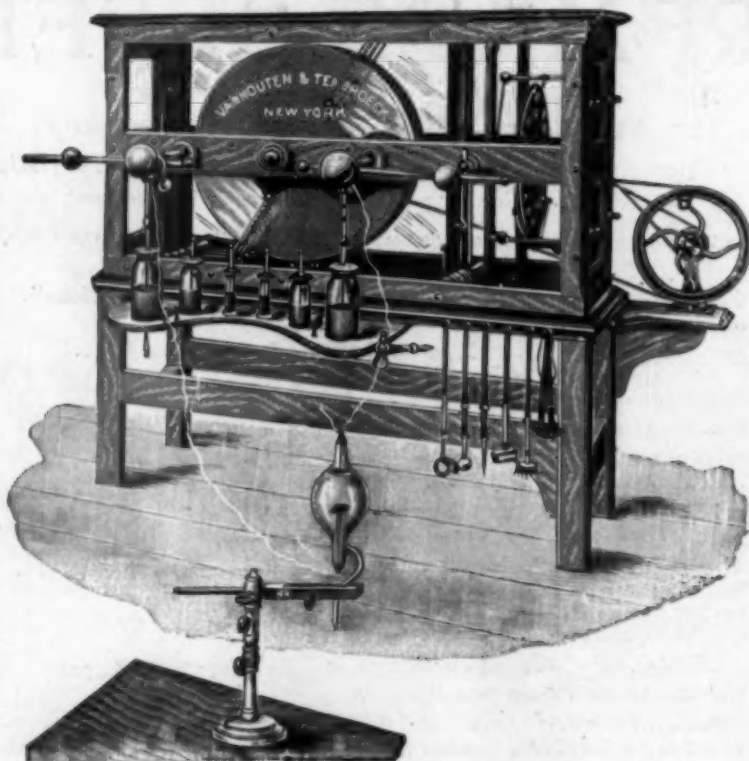
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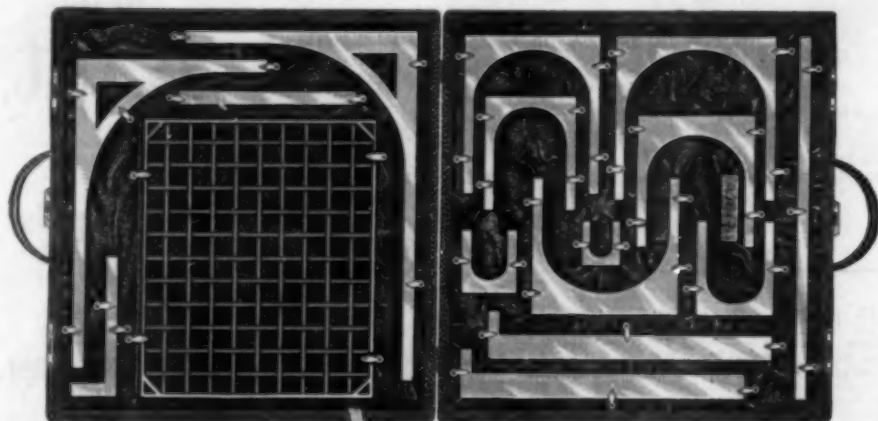
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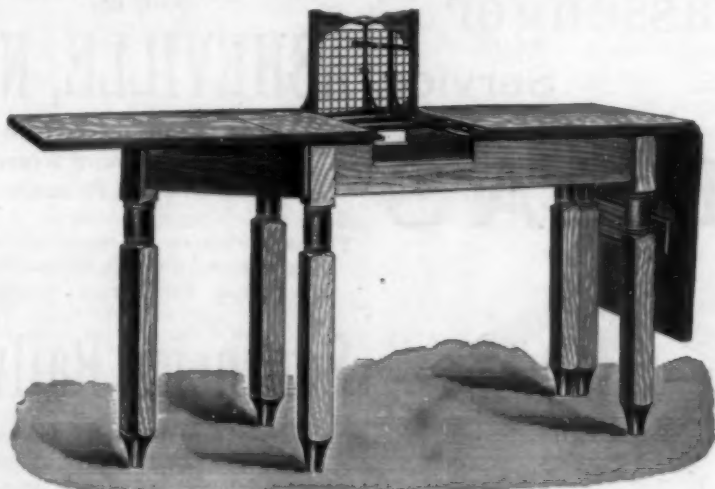
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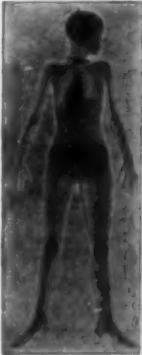
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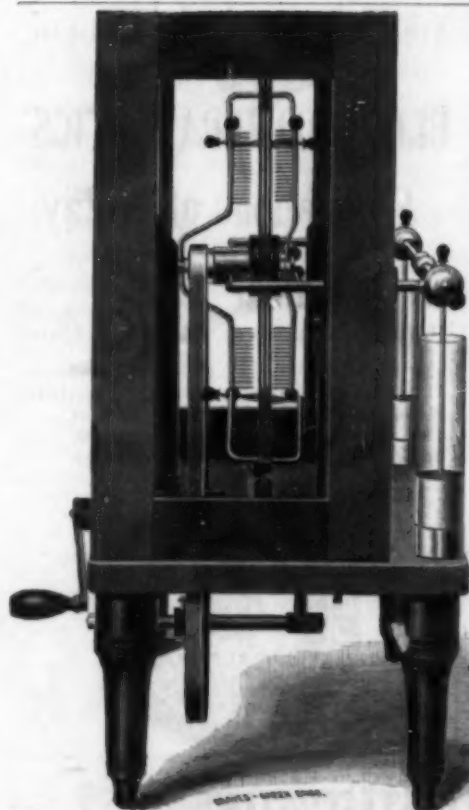
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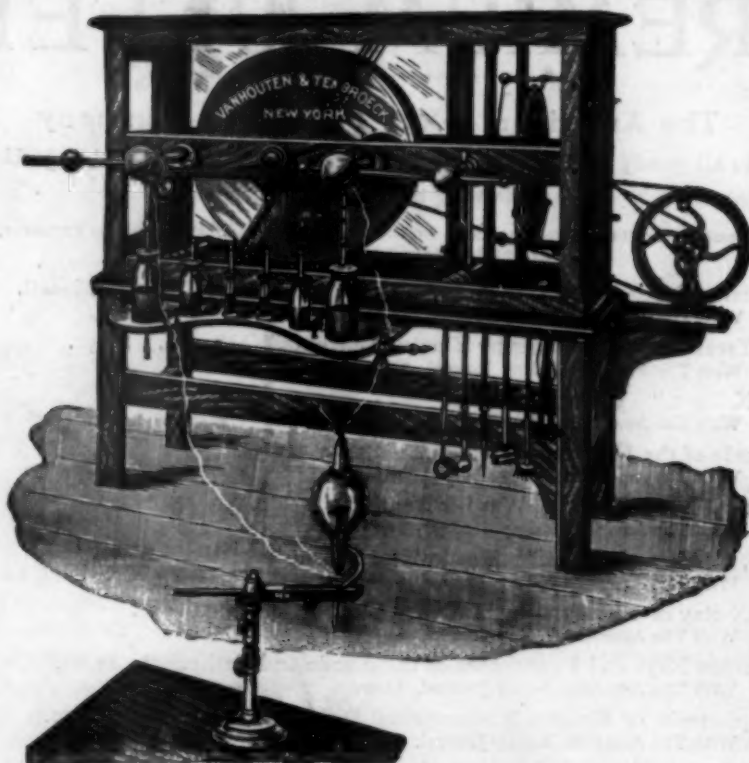
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WE take great pleasure in announcing to the medical profession that our Laboratory is fully equipped with the largest and most complete X-Ray apparatus of any laboratory in the country, and we are prepared to make X-Ray examinations and take shadowgraphs of any portions of the body, exposures varying from five seconds to five minutes, without danger of blistering or burning. All work done by us is geometrically correct. We have it so arranged that the surgeon can make the necessary examination himself by use of the Fluoroscope before the shadowgraph is taken, which will assist him very materially in the disposition of the case.

Ever since the discovery of the X-Ray, or at least within the past year, various damage suits have been brought against surgeons for supposed malpractice, relying on the X-Ray as evidence. Now the surgeon is obliged to protect himself against such malicious persons by having X-Ray examinations made before and after each operation. We will defend any practicing physician or surgeon, so far as X-Ray evidence goes, against such persons, free of charge, and will not allow any shadowgraphs to be taken by us, if we know it, that will injure or damage any member of the profession.

Dr. Pratt is a medico-legal expert, and will appear in court for or against, in cases where the X-Ray is introduced as evidence.

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